Educational Research Bulletin
SEPTEMBER 15, 1954
Vol. XXXIII, No. 6

Design in the Educational Film

By ROBERT WALTER WAGNER

THE purpose of this investigation is to find and test the meaning of what is proved, practiced, and surmised about certain elements in the design of effective educational motion pictures, and to lay a firmer foundation for present production and for future research.

The writer did not expect to find, nor did he hope to develop, a "formula" for the making of the successful educational film. The film-viewing experience is dynamic, not static, in quality. The rhetorical elements in any film interact with each other, with the nature of the audience, and with the time and circumstances of showing. This makes it difficult to isolate any single factor for study and then to combine it with other production elements in a "master design."

However, since a growing body of subjective and objective evidence on educational-film production does exist, it seemed reasonable to check this evidence against production techniques found in a group of films which have gained wide acceptance and use by teachers and leaders of school and adult groups. Such an analysis, it was believed, might lead to new insights on what makes a film popular and to a better understanding of the whole process of film communication.

The springboard for the investigation was provided early in 1953 with the publication of the Educational Film Library Association's "Report on Most Used Films."[1] This was a survey of the membership of the Association to discover the titles of the ten or fifteen films most requested by school and adult groups. From a total of 134 returns, in which the titles of 932 films were mentioned, nine were found to be most popular with school groups, and thirteen were listed as most used by adult groups.

[1] *EFLA Bulletin*, IX (February, 1953), pp. 2–3.

Films reported as most used by schools were: "Adventures of Bunny Rabbit," "Colonial Children," "Gray Squirrel," "The Loon's Necklace," "Autumn on the Farm," "Land of Liberty," "The River," "Common Animals of the Woods," and "Farm Animals."

Films reported as most used by adult groups were: "Preface to a Life," "The River," "Children's Emotions," "Overdependency," "America the Beautiful," "Angry Boy," "Human Reproduction," "Learning to Understand Children," "Feeling of Hostility," "Broader Concept of Method," "Brotherhood of Man," "Boundary Lines," and "Animals Unlimited."

One film, "The River," appeared in both lists, so that, while for comparative purposes a total of twenty-two films was considered, generalizations on the entire list of films, regardless of the level for which they were intended, were made on the basis of the twenty-one individual titles.

The selection of specific elements for study in these films was guided by the following criteria: the elements had to be those which could be identified and defined with reasonable accuracy; they had to be elements concerning which some experimental evidence existed against which the present findings could be checked; they had to be elements of practical concern to the producer of educational films.

On this basis, the twenty-one most used films listed by the Educational Film Library Association were analyzed with respect to structural organization, audience involvement, level of verbalization and rate of delivery, camera interpretation, color, music and sound effects, optical and special effects, and animation.

Scripts and teacher's guides were obtained for sixteen of the twenty-one films, so that in these cases the analysis proceeded from script as well as from screen. Each film was viewed at least three times, and various sub-studies were involved in the determination of each of the factors mentioned.

The results of the film analysis were then compared, first, with non-experimental evidence and, second, with experimental evidence on the same elements.

IN GENERAL, these productions reflect a variety of approaches to film-making. Although Encyclopaedia Britannica Films produced or now distributes seven of the nine school films studied, and McGraw-Hill Text Films is responsible for six of

the thirteen adult films listed, documentary film-makers like Pare Lorentz and Willard Van Dyke, major studios like Warner Brothers and Metro-Goldwyn-Mayer, and seven different independent commercial film-production organizations are also represented.

The fact that approximately three-fourths of these films are more than five years old, one-third having been produced more than ten years ago, may simply prove that educational films are slow to get into wide circulation. It may also reflect the teacher's habit of ordering the same film, relying on the "tried and true." On the other hand, it may mean that these films have been found to provide genuinely worth-while experiences by teachers who have used them over a period of years.

Certainly, one reason for the wide popularity of these films would seem to be that they meet broad subject-matter needs. The school films are mostly in the primary area, six of the nine films listed dealing with animals. Ten of the thirteen films in the adult group are based on social or personal problems, and at least seven are partially in the field of mental hygiene. All are broadly educational rather than narrowly instructional.

An analysis of the specific production elements of the twenty-one films studied yields the following data:

1. The school films tend to be shorter than the adult films, the former having an average running time of fifteen minutes, the latter an average running time of twenty-two minutes.

2. The school films average 92 scenes per reel, with an average scene length of 4.1 feet, or about seven seconds. The adult films average 76 scenes per reel, with an average scene length of 6.0 feet, or ten seconds. The extensive use of dialogue sequences tends to increase scene length in pictures in the latter group.

3. Although introductions, summaries, and repetition have been found to be important organizational factors helpful in promoting retention, only four of the twenty-one films studied include an introduction, only two contain a summary, and in only six are various forms of repetition—verbal, pictorial, or musical—used to any extent.

4. As measured by the Dale-Chall formula for predicting readability, the narration of the school films ranges from Grades IV to X, with an average at fifth to sixth grade. If "The River" and "Land of Liberty," both of which were originally intended for theatrical release, are excluded, the readability level of the narration in films most widely used by schools is found to be at Grade IV.

The level of narration in the adult films ranges from the fourth to the tenth grade, with an average of seventh to eighth grade. In this

connection, the average sentence length in the school films is approximately 7.8 words; in the adult films, about 21.0 words.

As measured by a reliable readability formula, therefore, the narrations of these films fall at or near the theoretical reading level of the audience for which they were intended.

5. The rate of verbal delivery, in terms of number of words spoken by the narrator, ranges from 90 to 155 words a minute in the school films, and from 75 to 155 words a minute in the adult films. The total average for all films falls below the 130 words a minute commonly considered to be a normal rate of speech.

6. All of the films in both groups contain one or more elements related to audience involvement (that is, "identification," "familiarity," "anticipation," "participation," "dramatic structure").

The adult films, in general, contain more of these elements than the films intended for school use—a finding which follows logically from the fact that at least eight of the thirteen adult films deal directly with emotional situations and are intended to influence attitudes.

7. Straightforward, simple camera interpretation on the long-shot, medium-shot, close-up pattern characterizes the school films designed for the elementary level. In the adult films, the camera is used more interpretively—angle, composition, and lighting being important cues to the meaning of the scene. The technical quality of the photography in all films is good to excellent.

8. Color is found in only six of the twenty-one films studied, two of these being on the school list, four on the adult list. Color appears to be used representationally—to show "what it looks like," and symbolically—to show "what it means."

9. Animation, found in six of the twenty-one films, is used for a wide variety of purposes and in a variety of techniques. The work of well-known animation artists and technicians like Phillip Stapp, Norman McLaren, and Nathan Sobel is represented in these films.

10. Sound effects are used in all but one of the twenty-one films. Music is found in only three of the nine school films but is used symbolically as well as representationally in ten of the thirteen adult films. The work of a number of experienced composers of film music, such as Virgil Thomson, Gene Forrell, Robert Fleming, and Karol Rathaus, is found in this group of films, indicating the integral importance of music in the design of at least four of the films investigated.

11. Optical effects appear in the body of all films except one. The most commonly used optical effect is the dissolve, a total of 310 of these effects appearing in all pictures. The fade (in and out) is found 126 times. The wipe is infrequently used, only six of these effects appearing in the total of twenty-one films. All optical effects are used conventionally to symbolize the beginning and ending of an idea and to effect transitions involving changes of time, place, or situation.

12. Two of the school films and five of the adult films contain special effects such as "zooms," double exposures, montages, and other purely cinematic devices. While such effects are noticeably absent in films designed specifically for the lower grades, they appear in some of the adult films, where they are used to express abstract ideas.

THE analysis of film design is a type of consumer research which might well be continued on the basis of regular tabulations of the most widely used films. We need to know what kinds of films are popular. More important, we need to know what makes them popular. Such analyses must be evaluated, however, in the light of the professional judgments of film-makers, the practical experience of teachers, and the tested findings of research workers in the field of communication.

A close agreement is found between the design of twenty-one widely used films and certain empirical and experimental evidence. While, at the moment, there appears to be no single, universal design for the successful educational film, we do know something of the elements in the design, and how they operate in the process of film communication.

It is not surprising, however, to find that not all of the films analyzed exhibit all of the possible and theoretically desirable elements which might be used in the film designed for education. Film-making involves the judicious selection and use of various film techniques and rhetorical elements to suit the intended purpose and the intended audience rather than the mechanical application of a formula. Without such selectivity, it has been shown, the elements of a given film may conflict, producing inhibitory or negative results which destroy its effectiveness in communication.

With respect to the well-designed educational film, we make the following observations and suggestions:

1. The effect of the film will be proportional to the degree to which it is based on the common interest and needs of the audience for which it is intended.

2. The vocabulary level of the audience should be kept clearly in mind in preparing film narration; but it must be recognized that what is said is seldom as important as what is shown on the screen.

3. The structure of the film should be simple enough to be understood by its intended audience. The film should not contain too many different ideas, nor move too fast.

4. The rate at which the commentary is delivered should be between 100 and 130 words a minute.

5. The film may well include an introduction which clearly and succinctly poses the problem, orients the audience, and establishes "set," or a condition of readiness for the presentation.

6. Key ideas may be repeated two to four times for emphasis and reinforcement, but the repetitions should be varied and aesthetically satisfying as well. The summary is also useful as a form of repetition.

7. The running time of classroom films may vary from five to thirty minutes to fit the class period. Within this limit, the major consideration in film length will not be the capacity of a 16mm. reel, but the nature of what is said, and the best manner of saying it in motion-picture form.

8. It should be recognized that viewing a motion picture is an active, not a passive, experience, and that audience involvement in any type of film is a matter of degree. The elements of identification, familiarity, anticipation, participation, and dramatic structure will be built into the film to the degree necessary to bring about that changed behavior and sharing in common which mark successful communication and effective learning.

9. Color, music, sound, animation, and optical and special effects will be used selectively to simplify, amplify, and reinforce the main idea. The possible distractive influence of these factors will be studied. The subliminal effects of these elements will also be recognized and further explored.

10. The educational film will be deliberately designed to promote the finding and testing of meanings. In such films there will be more "forked-road" situations, more use of "open endings," to make the film a means of promoting new and better ways of thinking and behaving.

THE present popularity of certain films cannot, of course, be taken as the sole criterion for future production. As with books and other materials, there is a great need for films on a wide variety of topics, presented in a diversity of styles, ranging from the very expensive production of theatrical impact designed for large audiences, to the low-budget, simply constructed film for the small, specific audience.

We must also learn to build good teaching techniques into films so that they will communicate directly and effectively with or without further explanation. While good utilization by a capable teacher improves the chances that pupils will learn from films, there is a need for superior films in situations involving rapid mass learning. This need may become increasingly acute in the coming years as our educational system is strained by a fast-growing student population and a persistent shortage of

good teachers at all levels. Such films may also be required in adult education and for educational television.

The need for a wide variety of "self-sufficient" films, deliberately designed to influence behavior, places a heavy responsibility upon the producer of the educational film. His is a job which requires a constant re-examination of film techniques, an unwillingness to rely on formulas, and a basic understanding of the process of communication. The designer of educational films must be technician, teacher, artist, and scientist. Last, but not least, he must clearly understand the importance of his rôle as communicator of ideas in the light of the educational goals of our democratic society.

Through the years, the design of the educational film will change with the changing curriculum, with the development of new motion-picture techniques, with the wider range of subject-matter dealt with by increasing numbers and types of film producers, and with the inevitably changing needs and interests of the society in which films are produced and shown.

Present research in perception, group dynamics, social psychology, and related fields may influence the teaching film of the future. New methods in animation are being developed, the production of films through television systems is being explored, and it is now possible to record images, sound, and color on magnetic tape. Psychologically, sociologically, and technologically, our knowledge of the processes and techniques of communication is being rapidly expanded. As a result, the educational film fifty years hence, whether electronic, three-dimensional, or wide-screen, will be sharply different from the educational film as we know it today.

The study of how to make effective educational films is in its infancy. Much of what has been done is weakened by attempts to apply scientific methods and statistical procedures to processes which in themselves are little understood and not completely scientific. This has resulted in the accumulation of data which are contradictory, inconclusive, or meaningless.

PERHAPS the great frontier for research in educational-film production is a deeper, more basic study of the "signs" and "symbols" of which the motion picture is composed. Such research would involve a study of the motion picture for what it really is—a symbol system, not simply a method of repro-

ducing reality. It would have as its ultimate objective the development of a more simplified, and perhaps a more economic, design for the educational film, one which would tend to increase the linearity or directness with which the message passes from communicator to audience.

The motion picture does not achieve its effect simply by being realistic. The choice of lenses, the selection of camera angle, the chemical and physical transformations which take place in the production of a photographic record, constitute a screen or grid which effectively changes the appearance of things "as they really are."

On the other hand, the motion picture deliberately conceived and constructed as an audio-visual symbol system can be more "real" than real, can throw new light on the commonplace through a calculated reorganization of experience and reality. Pictures, words, and sounds can be selected and organized with respect to their importance as key signs or symbols at specific points in such a film, and with reference to the probable perceptive behavior of the intended audience.

This deeper study of audio-visual signs and symbols would concern the anthropologist, the psychologist, the sociologist, and the philosopher, as well as the teacher and the film-maker, for it is a study of a fundamental human process. In the end, such a study must surely lead not only to a technique of film-making but to a philosophy of film-making, to a philosophy of education, and to a way of finding and testing meanings in the symbolic world in which we live. [Vol. XXXIII, No. 6]

* * *

One of the findings of the fifth annual study of television conducted by Paul A. Witty of Northwestern University is that the attraction of the TV set for young people has diminished, although the drop is not sharp. A study of fifteen hundred elementary-school and four hundred high-school students shows that, while watching TV is still the favorite leisure activity of elementary-school pupils, high-school pupils give much less time to TV than formerly. The 1954 figures show a drop from 23 to 21 hours a week of TV viewing for the average elementary-school pupil and a drop from 17 to 14 for the high-school pupil.

Wanted: More Descriptive Research in Education

By FINLEY CARPENTER

A good case can be made for the argument that we often put the cart before the horse in educational research. We exhibit a tendency to put last things first and first things last. We display an overanxiety to get practical results, sliding over much of the laborious and painstaking pick-and-shovel work. When we look at the better-developed sciences, we find that great labor had been given to descriptive classification of material before experimentation yielded its best fruit. Even a cursory examination of the history of chemistry shows that progress was meager until a method was established for classifying and describing the elements. Zoology and botany are also based on descriptive classification.

But in education, and for that matter the other behavioral sciences, we have not developed description sufficiently to shape our materials in an orderly framework and to define variables as part of a standard language system. The purpose of this paper is twofold: first, to point up the need for more descriptive research; and, second, to call attention to limitations in existing methods which might be identified as response-response correlations (testing research) and controlled experiments.

Research in education can be classified in a number of different ways, but for present purposes only three kinds will be identified:

Response-response correlations.—Data in these studies are scores on tests, usually the paper-and-pencil variety. The researcher sets up a number of correlations and draws conclusions based on the significance level of computed coefficients.

Controlled experimentation.—The researcher is largely concerned here with the effect of manipulated variables upon behavior. In education the experiment often deals with the differential effect of teaching methods upon learning. For example, the experimenter sets up two ways of teaching spelling. One group is taught by Method A and another group by Method B. After both groups are given the same criterion test, difference in average performance is calculated and conclusions are based upon a test of significance.

Descriptive research.—The purpose of this research is to establish a clear description of materials and phenomena under investigation. The ultimate aim is to classify events so that later research can employ an unequivocal terminology and to lessen the confusion coming from *ad hoc* definitions. Observation is emphasized. Intensive and prolonged observation of the complex phenomena in education seems essential for building the necessary order for later research. Experimentation and test correlations have failed to establish such order. Therefore, it is significant to speak of descriptive research as a particular phase and to examine the reasons for giving it emphasis at this time. We may begin by recalling a list of restrictions in research of the first two types named.

SINCE most of the limitations of response-response correlations are well known, I shall list them without extended treatment.

1. Validity is largely a matter of assumption because most test-correlations studies do not show the relationship between scores and non-paper-and-pencil performance. Intercorrelation of test scores does not necessarily establish that the tests are measuring the more important objectives so often listed.

2. Generalizations are *ad hoc*, that is, they are limited to the specific tests involved. When other tests with equivalent titles are used, the results are quite often different.

3. Tests offer little direct information on how learning develops. Teachers are interested in finding efficient ways of changing response patterns; but tests fail, in the main, to provide such information.

4. Most experience involves learning; behavior is changing continually. And to the extent response patterns are changing, test reliability is attenuated as a function of time between test and retest. Even the interpretative significance of the split-half *r*'s of reliability is reduced.

5. In education we are interested in significant gains, not necessarily in the statistical interpretation of significance, for, if we use large groups, a relatively small difference can be statistically significant. In the practical sense, however, the difference may not merit the expense of making suggested changes.

6. Statements of functional relations are confined to response categories. Only by tenuous and indirect inferences can we generalize about the rôle environmental factors have in learning.

7. The test-correlation approach delimits information because it is largely confined to dichotomous response classes, that is, the student

either passes or fails an item. (Even weighting procedures used on multiple-response tests are a doubtful improvement.) Behavior is telescoped into scores, which further limits the range of data. But most importantly, tests yield no detailed information of response changes in process.

8. Tests fail to get at the dynamics of behavior. Again, this is due to the scant descriptive information given by test scores.

9. Test titles suggest linear dimensions which are usually more apparent than real. It is claimed that tests are measuring something, but just what is measured is often a matter of conjecture. Consequently, it is difficult to generalize about test results except in terms of prediction.

10. Tests have contributed little to the development of learning theories. The reason lies largely in the fact that tests do not offer the kind of data that is best for postulating relations between response classes and environmental factors. Test correlations do not deal directly with independent variables, which are vital referents in theoretical statements.

The preceding list is a partial outline of the limitations of response-response correlation research. Our expectancies, therefore, should not exceed the actual outcomes. It is hardly worth while to repeat that tests have been useful, but largely as instruments of prediction. We need more than prediction, however, to develop a science. We need to improve ways of control and to construct useful theoretical explanations.

EXPERIMENTATION is the *sine qua non* of most sciences. It is essential for the development of the scientific aspect of education. We need, then, more and better experiments. But much of the difficulty in educational experimentation lies in confused communication. We lack a standard terminology that is precise and inclusive of our important phenomena. In short, description has been poorly developed. Specifically, the difficulties are largely lack of control in the complex situation and lack of clearly identified variables and definition of specific response classes. This suggests a need for more basic experimentation, such as is being done by Mech and others.[1] But the

[1] Mech, E. "Resistance to Extinction of Two Patterns of Verbal Reinforcement," *Journal of Experimental Education*, XII (December, 1952), pp. 155–63; Mech, E., Kapos, E., Hurst, F., and Auble, D., "A Mathematical Description of the Relationship between Frequency of Responding (F) and Intertrial Interval in a Motivating Situation," *Journal of Psychology*, XXXVII (January, 1954), pp. 251–56a; Mech, E., and Auble, D., "Quantitative Studies of Verbal Reinforcement in Classroom Situations: I. Differential Reinforcement Related to Frequency of Error and Correct Responses," *Journal of Psychology*, XXXV (April, 1953), pp. 307–12; Mech, E., and Auble, D., "Partial Verbal Reinforcement Related to Distributed Practice in a Classroom Situation," *Journal of Psychology*, XXXVI (July, 1953), pp. 165–86.

contention here is that all terms do not need experimental definition, in the sense that they can be made precise only as derived from manipulating variables in the controlled situation. Most of our events can be classified by careful observation when a number of competent observers sift data and modify classifications until a fruitful terminology is developed.

It should be emphasized that the criticisms made do not imply that tests and controlled experiments should not be used. The point is that the two approaches often begin without clear descriptions of the materials and processes under scrutiny. Therefore, more could be expected from the usual methods if they were based upon well worked-out descriptions acceptable to most researchers in the field. The intention here is not to say that descriptive research should be considered as opposed to testing and experiments but to emphasize the need for more adequate description as a useful prelude to testing and experimentation, especially the latter.

Suppose a research team is interested in the broad area of teaching-learning effectiveness. They review existing studies and find a host of inconclusive results. They find that attempts to determine personal traits of the effective teacher lead into a blind alley because of the difficulty in measuring personality traits and because effective teachers seem to be found at all points on the continua. They look at studies in which methods of instruction are compared and find the problem of control so difficult that virtually nothing can be concluded about differences in outcome. Such controls as equalizing teachers' enthusiasm about methods of instruction assigned to them in an experiment and keeping students in different classes from interacting outside class (contamination effect) are almost overwhelming. These difficulties suggest that a new approach or an intervening phase of research is needed. Our team then takes a look at the possibilities of descriptive research as the best point of departure. So they ask the question, Can the classroom be objectively described? They forego the temptation of determining *a priori* labels for classroom events. Instead they decide to derive categories inductively from a great number of specific operations recorded during observation. They observe classrooms daily and meet periodically to discuss their findings. They evaluate the desirability of building a formal structure for their observations instead of operating under an implicit

structure peculiar to the individual observer. But they decide to form the explicit structure by sifting "uncontrolled" observations instead of imposing a logical frame of reference too early in the project. They believe that observation at first should be a freewheeling process, not restricted by a consensus of decisions until considerable data have been reported.

Adoption of a criterion is discussed and the research team decides to choose growth in problem-solving as a worthy objective. As the meaning of problem-solving becomes more clearly worked out, they begin to sharpen their observation for classroom operations that seem to have some bearing upon growth in problem-solving.

Finally, the day arrives when they think that enough data are in the hopper to call for an orderly organization, a determination of categories. They soon learn that their data can be ordered in a variety of ways. For example, they are confronted with the decision of classifying events under psychological headings such as "motivation," "stimulation," "expectancy," "permissiveness," and the like, or by using more pedestrian terms such as "amount of verbal approval," "frequency of problem-solving questions raised by the instructor," "extent to which instructor demonstrates phases of problem-solving during lecture," "amount of group interaction." To avoid the difficulty of deciding upon special definitions of psychological higher-order constructs, they decide to group their events under the more commonly understood phrases. They do this because observation is not yet complete. Psychological labels can be applied later.

Their first draft of a structured instrument for observation finally emerges. Part of it looks like the following:

CHECK LIST OF CLASSROOM OBSERVATIONS

Instructor Behavior

I. Lecture Operations

A. Organization
1. Follows a prepared syllabus given to the students
2. Places an outline on the blackboard
3. Presents an oral outline
4. Presents no outline
5. Summarizes at the end of the hour

B. Problem-solving content of the lecture
1. Extent to which instructor demonstrates problem-solving
a. Identifies specific problems
b. Identifies appropriate data
c. Supplies alternative hypotheses

d. Appraises hypotheses
e. Draws conclusions
f. Points out tentative character of conclusions
2. Amount of time given to delivery of factual information

II. Discussion
A. Structure
1. Discussion structured by instructor
2. Discussion partially structured by students
3. Discussion predominantly structured by students
B. Evaluation operations by instructor
1. Frequency of positive verbal approval
2. Frequency of negative verbal approval
3. Frequency of times instructor said nothing about students' recitation
4. Frequency of frowns and other negative responses associated with recitation
5. Frequency of times instructor accepts irrelevant responses
6. Frequency of times instructor accepts (does not correct) wrong responses
C. Amount of required recitation
1. Frequency with which instructor calls upon students by name
2. Frequency with which instructor directs questions to the class as a whole
D. Problem-solving content of questions raised by instructor
1. Frequency of "why" questions
2. Frequency of questions readily answered by short phrases
3. Frequency of questions asking for identification of assumptions
4. Frequency of questions asking for hypotheses
5. Frequency of questions asking for interpretation of data
6. Frequency of questions asking for expression of critical opinion
7. Frequency of questions asking for appraisal of a remark made by another student
8. Frequency of times instructor draws a student out to elaborate on his (student's) remark
9. Frequency of times instructor allows a student called upon to "pass" without making any remark

A comparable list of operations could be inserted under the heading of "Student Behavior." After further refining, our team draws up an instrument that can be used to determine the frequency of certain classroom operations that have some promise of being related to growth in problem-solving.

The next phase of their research is to determine the reliability of their instrument by comparing results of different observers in the same classroom. It is obvious that, to describe a classroom, the same class would have to be observed daily for nearly a whole term. Still later phases would include the relating of different descriptions to prescibed outcomes in problem-solving. From this they could determine what single operations or clusters have significant relations to the criterion measure. Thus, important classroom variables could be named, and an experimental study launched to determine how much the instructor can manipulate the variables and relate changes to outcomes.

The approach just outlined does not exclude the use of tests, but the implication is that, when tests are involved, some clear

[*Continued on page 167*]

A Note on the Caliber of Education Graduates

By GEORGE F. WOOSTER AND W. WALLACE STOVER

FROM time to time, disparaging statements appear concerning the academic caliber of students in the Colleges of Education? Are these students really low on the scale of scholastic ability? Are they really the castoffs of other colleges, as is so often intimated? Or do the figures frequently quoted misrepresent the facts? Actually, if the information adduced by the critics to prove their contention is based upon the entire enrollment in a College of Education or upon the entering freshman class, then it may well give a distorted picture. We suggest that a truer picture can be obtained by considering the information for a graduating class. Such is the information we wish to present here.

In December, 1953, the College of Education of Ohio State University granted 90 degrees: 74, Bachelor of Science in Education; 11, Bachelor of Fine Arts; 5, Bachelor of Science in Occupational Therapy. The mean cumulative point-hour ratio at graduation of the group awarded these degrees was 2.70. It is to be remembered that the rating scale here is on a 4.00 basis, with 2.00 assumed to be the equivalent of the *C*, or average, mark. At this point, it should be noted, too, that only 36 per cent of the ninety persons in this group entered the College of Education as Freshmen. The remaining 64 per cent transferred to the College at various stages in their academic careers. For this reason, figures based on a total enrollment or an entering freshman group may give a wholly inaccurate impression of the academic caliber of students in Education.

In Table I, the 90 students are classified by the degrees they received and by their mode of entrance to the College of Education. The mean percentiles on the Ohio State Psychological Examination are given in Column 3. The mean cumulative point-hour ratios are given in Column 4. Six of the students held other academic degrees.

Since the major concern of the College of Education is the preparation of new teachers, let us consider the academic achievement of the group of 74 students who received the degree of Bachelor of Science in Education last December. The

information regarding these graduates is very similar to that for the entire graduating class of the University. Their mean percentile rank on the Ohio State Psychological Examination was 62.62.[1] At graduation, the mean cumulative point-hour ratio for the group was 2.74, which is definitely above average. Above average, also, are the mean cumulative point-hour ratios of the class graduated in March, 1954 (2.71), and the class which will be graduated in June, 1954 (2.70, estimated). Certainly, the record of any one of these classes would compare

TABLE I

THE MEAN PERCENTILES ON THE OHIO STATE PSYCHOLOGICAL EXAMINATION AND MEAN CUMULATIVE POINT-HOUR RATIOS OF THE DECEMBER–1953 GRADUATES OF THE COLLEGE OF EDUCATION

Classification of Students	Number of Students	O.S.P.E. Percentiles	Cumulative Point-Hour Ratio
(1)	(2)	(3)	(4)
By degrees received:			
B.S. in Education	74	62.62	2.74
Bachelor of Fine Arts	11	69.18	2.60
B.S. in Occupational Therapy	5*	75.60	3.02
By entrance to College of Education as:			
Freshmen	32	62.16	2.62
Transfer students	52†	66.21	2.71
Holding other degrees	6	75.17	3.02
Total group	90	64.14	2.70

* One of these students transferred to this program from the Arts College and three others, from other institutions.

† Twenty-three of these students transferred from other colleges within the University and 29 from other institutions.

favorably with the record for the University as a whole. Actually, it is another group in the College of Education which shows up better by comparison—the students in occupational therapy. For the five graduates who received degrees in occupational therapy, the mean percentile rank on the Ohio State Psychological Examination was 75.6 and the mean cumulative point-hour ratio at graduation was 3.02. An important factor in the relatively high achievement of students in occupational therapy may well be that admission to this program is by selection only. True, there is a program of selective retention in connection with the teacher-training curriculum—that is, the

[1] Percentile scores on this test of scholastic aptitude are so set up that the 50th percentile is, by definition, the average.

records of all students are reviewed, and certain standards must be met at various stages in the program—but this type of screening is not so effective as a concentrated screening at admission.

We would like to point out here, before turning to other considerations, that the mean percentile scores on the Ohio State Psychological Examination and the mean point-hour ratios given previously have two major implications. First, these figures show that graduates in Education, instead of rating low on the scale of scholastic ability, rate, in general, above average. Second, these same figures show that transfer students cannot be classed as the castoffs of other colleges.

TURNING from strictly academic data, it is of interest to note that the mean age of the group at graduation was twenty-four, and that there were more women than men (although the ratio is smaller than might be expected—1.6 to 1). Only six of the ninety came from outside the state of Ohio. Of those listed as residents of Ohio, slightly more than 40 per cent came from the Columbus area. In addition to these data, there is one item that is of major importance—only 36 per cent of this group had started their college careers in the College of Education. This proportion holds true for all our graduating classes. There are many sources which indicate that, of any entering freshman class, we can anticipate that only about one-third will ever graduate from the College of Education. At present, a project is under way to determine what happens to the other two-thirds, and why, if possible; this is to be a four- or five-year follow-up of all students in an entering freshman class.

The information about a graduating class which such a study should give—that is, the proportion of transfer students as compared with the proportion who originally started in the College—would have important implications for future action by Colleges of Education that are concerned about the need for recruitment of teachers. Some colleges and professional organizations have published informative pamphlets and bulletins to attract students into the teaching profession. These, however, are oriented toward students in high school and persons not attending college. On the basis of the information given here, it would seem that more attention should be directed to recruit-

[*Continued on page 167*]

On Debating the Right Question

By ARTHUR W. FOSHAY

In the September 11, 1954, issue of the *Saturday Review* (the "Accent on Education" issue), Norman Cousins takes up the great debate in American education and tries to clear the ground. He succeeds, I think, in removing some obstacles; he doesn't succeed in suggesting what the subject-matter of the debate should be. For there is no debate—there are no opposing sides—on "freedom to do one's best in an atmosphere that makes possible one's best," "freedom from stagnation," "freedom . . . to . . . adventure." Most of the debate is (or should be) about methods, not goals, anyway. When we educators recognize the fundamental goals we share with our critics, the debate on method can proceed.

The bickering that results from slanderous charges of anti-religion, anti–American heritage, anti–public participation will never rise above the form in which such charges are hurled unless we educators learn how to perceive them (as Cousins does) as misunderstandings, and to devote the attention of our questioners and ourselves (as Cousins does not try to do) to what it is that is being misunderstood. Cousins is right in impugning the motives of some who make charges like these. But the charges are repeated by others whose motives are above challenge. What is one to say of such people? That they are naïve? Dupes? I think not.

It is more helpful to consider these charges, slanderous as they are, to be popular because they relate somehow to the values we all should live by, and thus to the goals of education —though the relationship may not be clear, even to the one who hurls the slander.

What are these values? Are "freedom to . . . " and "freedom from . . . " sufficient expressions of them? As they are usually expressed, they are somewhat more specific than this. Let's consider three.

First, the dignity of work. Labor has been given a place of value in American life. Everyone works with his hands, here; honor goes to those who do productive work for a living. Elsewhere in the world, our notion of the dignity of work is incompatible with membership in the aristocracy. But we have an

aristocracy of work, open to everyone on the basis of his imaginativeness and productivity—his merit. Does the modern educator's emphasis on "beginning where they are," or avoiding frustration from the assignment of meaningless tasks, blunder into conflict with the American value system at this point?

Second, individual initiative. The American heritage of freedom has meant that each person should work unfettered, doing what was best for him, according to his judgment, within moral limits set by the culture and enforced in part by the government. We have, historically, built an environment that encouraged individual competition within a framework of fair play—equality of opportunity, reward for objective product. When we educators point out the fallacy of competition for school marks, and insist on permissiveness as a requirement for growth (as we must), do we blunder into conflict with this American value?

Third, subordination of the government to the individual. The American Way was born in a revolution against tyranny that led to the establishment of the principle that the government should never be more powerful than the governed; that the individual is at his best under a weak central government. Disregarding, for purposes of this discussion, the great public question that has grown with the power of the national government since 1900, do we educators blunder into conflict with the principle of government by consent when we indicate the crucial importance of skill in human relations, and the necessity of good group membership and co-operation?

My answer to these questions is yes. Yes, we do blunder—blunder, I say—into apparent opposition to these basic values. We do it whenever we hold modern educational beliefs in a doctrinaire manner—when we hide behind "research says . . . ," or "what we know about children indicates . . . ," or even "we teachers think . . . ." Nobody gave us the right to use authority to silence people. But we've done it, and reaped slander. We blunder into apparent opposition to values we ourselves seek to apply whenever we fail to reach behind a question to the value the questioner has in mind. When we are asked about the marking system, or "100-per cent promotion," we would do well to test the possibility that the questioner's fundamental concern is with something really important—the dignity of work, reward for merit, or keeping open

the prestige system associated with productivity. Things that smack of paternalism or subordination of the individual are repugnant—not only to our questioners, but to us. We have to make this clear, or we will continue to fight on the wrong issues, in the wrong terms, with the wrong antagonists.

The simplest way to make the matter clear is to reach behind the question to the value. When someone says, "Do you believe in discipline?" the wrong response is the academic, "That depends on what you mean by discipline." The more helpful response is, "Yes, I think that children have to learn the limits of individual behavior. The trick is to establish these limits without destroying a child's independence and curiosity." The chances are that this response will cut through to where the real question is. When someone asks, "Do you think children should be promoted when they haven't passed?" don't quibble over the meaning of "promoted" and "passed." Reach behind these words with, "I don't think children should be rewarded when they haven't worked. The question is, are promotion and non-promotion real rewards, or do they misrepresent the real rewards of educational effort?" This at least suggests where the problem lies.

The general pattern for working with our questioners and our critics must proceed from the assumption that they are sincere, that they are referring to real and important values when they question and criticize. The thing to do, then, is this: make a guess concerning the value underlying the question, and respond to that. Suggest, if you can, the fundamental value-conflict that exists. Questions deserve responses that show respect for the questioner as a person and for the values he is supporting. The burden of proof that he doesn't deserve such respect lies with us, not him. And the quickest test to apply is this: assume that he is sincere and intelligent. Suggest (if he hasn't) the value he is implying, and join him in affirming it. If he is sincere, you and he will now speak temperately about methods, not beliefs. If he is insincere, he will quickly change to another question, and another, probing for an intemperate flareback that he can use.

What I am suggesting is not the soft answer that turneth away wrath. It is the penetrating answer that suggests a more fundamental basis on which Mr. Cousins' Great Debate may proceed.

EDITORIAL COMMENT

A Case for the Record

THE case of Mary Jones is instructive for educators in general and personnel workers in particular. Mary, an intelligent and popular girl, was a Senior in Brown High School in one of the larger cities of Ohio. One of the requirements for graduation was competence in reading and arithmetic at not lower than the eighth-grade level. Early in the school year, standardized tests were given to all Seniors; for those whose scores fell below the cutting point, tutors were assigned from the teaching staff to help them acquire the necessary competence before the end of the year.

Mary's score on the arithmetic test was below the requirement because of her inability to handle fractions. In a conference with her tutor, she frankly admitted and cheerfully accepted this inability. "I just can't do fractions; I never could." The tutor tried to get her to realize her need for at least a minimum competence in the area. He pointed out that if she ever wanted a job as a salesperson in a store, for example, she would have to be able to handle fractions.

"But," said Mary, "I already work in a store. I've been a clerk at Smith's [one of the better department stores] for three years."

"In what department?"

"Yard goods."

A telephone call to Smith's quickly confirmed Mary's statements. She had, indeed, been a salesclerk in the yard-goods department for three years. Moreover, she had an excellent record: she was considered one of the best salespersons in the store.

The astonished tutor asked Mary how she determined the amount to be paid in a sale involving a fraction of a yard. "I always ask one of the other clerks to figure it for me." She explained that she helped the others with stock-checking and other jobs that they disliked. She was careful, also, from time to time to "throw" a good sale to one of the persons who had helped her. So her fellow clerks were more than willing to help her with arithmetic.

[*Continued on page 168*]

READINGS

Books to Read

EIKENBERRY, D. H. "The Need for the Upward Extension of Secondary Education in Ohio." Columbus, Ohio: College of Education, Ohio State University, 1954. iv+90 pp.

Much of what has appeared in the press in the last few years has borne upon the problems for education at the elementary and secondary levels created by the rapidly increasing enrollments. That this is a serious and pressing problem no one can question. But Mr. Eikenberry is interested in another problem, related to the former, but especially neglected by Ohio as compared with other populous and wealthy states with which it likes to be compared. This problem is the provision of educational opportunities beyond the high school (twelfth grade) to the ever increasing number of boys and girls who want and will need this further education.

In this mimeographed booklet, Mr. Eikenberry presents significant data from research studies, from the writings of competent individuals and formal bodies, all of which stress the need. He finds that distance between home and the college and the cost of tuition prevent thousands of youth from gaining the added preparation desired. His proposed solution is the public community college, a two-year institution locally controlled and designed to meet the needs of local youth.

The data presented are easily read and interpreted. The evidence that Ohio is not meeting the needs of a large proportion of its youth is convincing. The author appeals to the present State School Survey Committee to devote part of its time and energy to the gathering of needed facts and the formulation of a long-range program in order that necessary legislation be not needlessly delayed. Such a recommendation is highly in order. This booklet should be compulsory reading for every member of the Committee. It will also be valuable reading for everyone with responsibilities for the educational policies of the state. Does that exempt any adult citizen?

E. J. ASHBAUGH
Miami University

DALE, EDGAR. *Audio-Visual Methods in Teaching.* Rev. ed. New York: Dryden Press, 1954. ix+534 pp.

This revised edition is in many respects a new book, more extensive in its coverage and more attractive in its format than the earlier edition. The most notable feature of the book continues to be its success in vividly portraying teaching materials as means for effectively reaching educational goals. Audio-visual materials are presented in their relation to the problem of communication, as tools for the learning of ideas and skills, as means by which learning can be made permanent and pleasant.

Through the improved format of the book, the author effectively demonstrates some of the principles of good visualization which he discusses. The type is easily read; the illustrations are attractive, carefully chosen, and well

reproduced. These mechanical factors, combined with Dale's flair for succinct writing, add up to readability in a high degree.

The three major divisions of the book retain the basic organization of the earlier edition: Theory of Audio-Visual Instruction, Materials for Audio-Visual Instruction, and Classroom Applications of Audio-Visual Techniques. However, readers familiar with the old edition will note many changes. There are a large number of new pictures, forty-nine of them in color, and four new chapters: Educational Television; Planning, Organizing and Evaluation; Human Relations in Education; and the Humanities. Certain to be well received by users of the book are the comprehensive listings of sources and study aids following each of the thirty chapters, and the lists (with sources) of films, recordings, and other materials.

It is indeed refreshing to find a textbook as decidedly meaty as this one, which is at the same time readable and attractive. In a very real sense the author practices here many of the effective techniques of communication he advocates. It is safe to predict that this revised book will take an even firmer hold on the audio-visual field.

WILLIAM G. HART
Dearborn, Michigan, Public Schools

CONRAD, MARION J. *A Manual for Determining the Operating Capacity of Secondary-School Buildings.* Columbus, Ohio; Bureau of Educational Research, Ohio State University, 1954. iv+28+16 pp.

This manual gives school administrators, as well as specialists in the school-plant field, a technique for determining the operating capacity of buildings in terms of the specific educational program and policies of a particular school district. The assumption of the author in using this approach "is that capacity is integrally related to the educational program and policies of each school system rather than dependent upon arbitrary standards applicable to all school situations" (page 1).

A capacity formula has been derived as the basis for determining the operating capacity of a secondary-school building. Forms, with detailed instructions for their proper use, accompany the manual, which also contains an example of an actual capacity study.

Although obtaining the operating capacity for the existing program is the primary use of the formula, it may also be used in determining building capacity for some projected use or for a changed daily-program organization; it determines the subject areas in which overcrowding is present and measures the degree of overcrowding; and it is useful in the planning of new secondary-school buildings or in the remodeling of existing buildings. Of course, "any comprehensive survey of school-plant facilities must include the qualitative aspects of school plant as well as the quantitative ones measured by this capacity technique" (page 3). This capacity technique has been found to be very useful by the Survey Division of the Bureau of Educational Research, Ohio State University, in its surveys of school-plant needs throughout the state. The manual should be a useful tool for school administrators and others who have the responsibility of providing school housing for their districts.

JOHN E. GEE
Bowling Green State University

COOK, LLOYD, AND COOK, ELAINE. *Intergroup Education.* New York: McGraw-Hill Book Company, Inc., 1954. xvi+392 pp.

Addressed mainly to pre-service and in-service teachers, this book deals with what used to be widely known as "intercultural education," and what the authors choose to expand under a more current label.

Intergroup education, taken literally, might include almost every kind of current social problem. Basically, it is a study of the fissures created in our society by differences of race, creed, and national origins. The thing that sets it apart from general education, as a subject for special study, of course, is the tension which surrounds these aspects of our social life, and the range of their impact from community to international affairs.

Part I of this interesting and well-written book begins with a series of case studies of prejudice followed by an outline of the historical origins of minorities in our own country. Part II traces the development of "anti-attitudes" and actions in childhood, adolescence, and adult life. Part III is a consideration of the problem of changing and improving human relations through legislation, education, and other means, with emphasis on group-process methods. In Part IV the rôle of the teacher in intergroup education is examined.

The Cooks have taken a realistic approach to a subject which has already probably produced too much purely sentimental literature. While the authors are in search of a definition of intergroup education which embraces words like "justice," "fair play," and "sense of equal rights," their approach is based solidly on experimental findings, case studies, and human history. In the course of the search the authors ask almost as many questions as they answer. Various viewpoints are presented. Never doctrinaire, this book appears to be a genuine attempt to show the present clash of values and to interest students in working out their own positions.

"Intergroup education" is a new variation on the old, old theme of man in search of himself. This recent work by Lloyd and Elaine Cook should serve to revive incentives and furnish new ammunition for teachers in the battle against prejudice which must be fought to preserve both our democratic tradition and our reputation as beings capable of living rational and moral lives.

ROBERT W. WAGNER

LONSDALE, BERNARD J., AND DOLDER, EDWARD F., compilers. *Conservation—Concern for Tomorrow.* Sacramento, California: California State Department of Education, 1954. viii+173 pp. (Bulletin of the California State Department of Education, Vol. XXIII, No. 1).

The purpose of this volume is to arouse in the minds of school administrators and curriculum-planners a consciousness of the utter dependence of mankind upon natural resources and the necessity for a wiser use of these materials if the human race is to survive. Once convinced of the urgency of the problem, what can the educator do about it? A great deal, believes Don E. Simpson, superintendent of public instruction. In his foreword Mr. Simpson points out that "the success of any conservation program depends on public opinion. Desirable public opinion can be created through education" (page iii).

How, then, can we provide the sort of education that will bring about this end? In the ensuing nine chapters, eleven authors consider such topics as

the nature of conservation, the moral responsibility of the citizen, the nature of conservation education, and its place in the curriculum. The principal resources of California are discussed—its soil, water, forests, wildlife, and minerals. The state and national park areas are described.

The final chapter takes up practical methods of curriculum development in conservation education and the effective use of materials and procedures. While no new or original ideas are presented, the steps are well organized and a clear, definite, and workable program outlined, applicable in any part of the country. The authors stress the point that "curriculum improvement should stem from within the school rather than by legal compulsion or a curriculum handed down from the state level" (page 168).

The volume is concluded by an appendix listing instructional materials for conservation education in California.

MILDRED FISHER MARPLE

RUNES, DAGOBERT D. *Of God, the Devil and the Jews.* New York: Philosophical Library, Inc., 1952. vi+186 pp.

This volume of essays, often subtly written, expresses the convictions of one who has watched the course of the world with its unconvincing sophistry and unbalance. The first essay runs to twenty-nine pages; the remainder run from one to nine, most being four pages in length. The first, "The Good God and God," is a fierce diatribe against the God who made the universe of cruel beings who devour one another—including man—and ends with the suggestion that the true God is the spirit of love in the heart of man. How the author finds this in the heart of man, who is cruel along with the animals, is not clear.

In "The Angels Don't Keep Pets" we find a contrast between the absurdity of expending affection upon foul-mannered beasts and the sensible interest that might be manifested toward needy humans the world around. "Christ Stopped at Georgia" is a rebuke to Christians for the way in which they upheld slavery in the last century and still maintain extensive race discrimination at present. "Amor Apostolorum" maintains that self-love is the only love possible, though there is a lower and a higher kind of love, and the latter can go through oneself to all other beings. The collapse of Christian civilization has been due to its failure to realize the latter possibility. And so on through "Jew-baiting and the Holy Ghost," "Learning of the Heart," to "History in Full Dress."

ALBERT E. AVEY

KNAPP, ROBERT H., AND GREENBAUM, JOSEPH J. *The Younger American Scholar: His Collegiate Origins.* Chicago: University of Chicago Press, 1953. xiv+122 pp.

In the introduction the authors state that

> two purposes have motivated the execution of this study. First the desire to compile a roster of younger American scholars and scientists, who, while not yet attaining mature levels of intellectual accomplishment, show promise of such achievement in the future; and second, the wish to determine how those patterns and characteristics of undergraduate institutions may be associated with varying success in the production of such individuals.
>
> Once having compiled our roster, we need only identify the collegiate origins of

those listed in it in order to assess the achievement of particular institutions and to obtain an intimation at least of the demographic and socio-psychological factors which favor superior productivity of scholars (page i).

The roster contained the names of individuals who had obtained Bachelors' degrees from institutions in the United States in 1946 or later, and who, between 1946 and 1951, had received a graduate fellowship or scholarship for study in one of the twenty-five leading graduate schools in the nation or had been granted an earned doctorate by one of these institutions before the end of the year 1951. The fields of law, medicine, and theology were excluded, along with the postdoctoral grants. An index procedure was applied to the roster to find the number of awards made per one thousand students graduating from the undergraduate colleges which made such awards. Indexes were built for Ph.D. awards; for private, business, government, and university fellowships respectively; and for awards to students in science, social science, and the humanities. Studies were made of the baccalaureate institutions attended by the students who received awards as to size, type, age, geographic location, and tuition charged.

The calculations appear to have been carefully made, but the bases used to select the roster and determine some of the findings were not sound in the judgment of the reviewer.

The twenty-five universities included in the study grant seventy-five per cent of the earned Doctors' degrees awarded in the United States. Twenty of these are located east of the Missouri River and north of a line from the Ohio River to the Atlantic Ocean through Washington, D. C. Three are in California. The other two are in North Carolina and Texas. With such a sampling, including no graduate institutions in the Northwest or the Rocky Mountain states and almost none in the Great Plains and the southeastern regions, it is not surprising to find that those who received awards in these twenty-five institutions came heavily from the northeastern and Great Lakes regions, with low representation from other sections of the nation.

The decision not to include recipients of assistantships in the roster eliminated a large number of scholars, many of whom could not otherwise have afforded graduate work, and many of whom probably had been outstanding undergraduates in the graduate institutions attended. Omission of assistants probably caused the findings as to the proportion of graduates obtaining scholarships or Doctors' degrees to favor the separate undergraduate college.

The decision to include as "younger" only those persons receiving awards who had taken their undergraduate degree in 1946 or later, virtually meant selection of the roster in terms of financial means. Two-thirds of the original roster were eliminated by this selection. By this decision the roster of "younger American scholars" was restricted mainly to those who had the means for partially or wholly supporting themselves in graduate work very soon after they had graduated from college. This selection basis almost predetermined the finding that "the highest cost institutions are several times more productive than those of middle range or low cost" (page 92). The decision also excluded many graduates in education, business, engineering, and other areas where graduate work is prohibited or discouraged for individuals without several years of professional experience. This sampling could determine the finding that "the Liberal Arts and University samples had an appre-

ciably higher average rate of production than the Technological sample or the miscellaneous sample" (page 91).

The sources of the 17,288 who were eliminated from the roster because of undergraduate college graduation before 1946 may have been quite different (probably they were chiefly the professional schools of the larger universities) from the sources of the 8,264 younger people whose names were included.

The third question raised by the reviewer is, Why such a concern for determining the *proportion* of graduates who are "younger American scholars"? Why not stress *total* contributions of each institution? Just what implications can be drawn from statistics showing that a larger proportion of the graduates of one school than of another, get scholarships, fellowships, or Ph.D. degrees within five years after receiving the Bachelor's degree?

The report contains much interesting information which would have been very valuable if the sample had not been so narrowly restricted.

EARL W. ANDERSON

* * *

A Note on the Caliber of Education Graduates

[*Continued from page 157*]

ing among the new freshman students who are already enrolled in the College of Education.

With particular reference to transfer students (especially those who transfer from one college to another within the university), preliminary work should be done at the high-school level by teachers, principals, and guidance counselors. Many students could be given greater help in coming to wise decisions about the advisability of attending college and, if they decide in favor of it, about which college to enroll in. Those of us working at the college level are under an even greater obligation to recognize and accept our responsibility in this connection.

Wanted: More Descriptive Research in Education

[*Continued from page 154*]

connection be shown between the measures and their ultimate criteria, actual behavior. Also, there promises to be profit in

using tests more freely in the experimental situation, that is, in noting changes in scores as the conditions are changed. This means putting less reliance on correlations between tests that have only assumed validity.

This procedure promises to yield definitions of useful variables that could be handled in the controlled experiment. Names of such variables could become standard terms. Until we have worked in the descriptive phase much more extensively, however, we shall continue to stumble along with the cart before the horse. [Vol. XXXIII, No. 6]

A Case for the Record

[*Continued from page 161*]

So much for the facts in the case. What about their significance? They show that something was wrong in Mary's school; otherwise, she would not have been permitteed to advance to the twelfth grade without learning how to handle fractions. That she had the ability to do this is shown by the fact that, after working with her tutor, she passed the test and graduated with her class.

More importantly, Mary's case illustrates in a striking way two principles which have long been recognized but which need repeated emphasis. First, a person's success in a given situation is dependent not upon any one trait or ability but upon his whole personality. Human traits and abilities are not discrete, like sticks in a bundle, but interact with each other in highly complex ways. A lack that would be quite serious for one person may not be so for another person in the same job. It is possible to compensate for a shortcoming in one area by excellence in another.

The second principle is the great importance of ability to deal with people. We are told that, in many fields of work, more failures result from inability to do this than from lack of technical knowledge or skill. Because she was adept in the area of human relations, Mary was a highly successful salesperson, notwithstanding her lack of an "essential" skill. It is safe to predict that she will get along in any situation in which she finds herself. The schools have no more important function than that of promoting the development by their pupils of ability in human relations.

R. H. E.